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Data Summary
IHSS Group 700-12

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**Data Summary
IHSS Group 700-12**

Approval received from the Colorado Department of Public Health and Environment
(APPROVED MAY 15 2003)
Approval letter contained in the Administrative Record

June 2003

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ACRONYMS

AL	action level
AR	Administrative Record
CDPHE	Colorado Department of Public Health and Environment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DOE	U.S. Department of Energy
DQA	Data Quality Assessment
DQO	Data Quality Objective
EPA	U.S. Environmental Protection Agency
FY	Fiscal Year
HPGe	High-Purity Germanium
HRR	Historical Release Report
IA	Industrial Area
IASAP	Industrial Area Sampling and Analysis Plan
IHSS	Individual Hazardous Substance Site
K-H	Kaiser-Hill Company L.L.C.
MDL	method detection limit
NA	not applicable
ND	non-detect
NFAA	No Further Accelerated Action
PAC	Potential Area of Concern
PARCCS	precision, accuracy, representativeness, completeness, comparability, and sensitivity
pCi/g	picocurie per gram
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RIN	report identification number
RL	reporting limit
SAP	Sampling and Analysis Plan
V&V	verification and validation
WRW	Wildlife Refuge Worker

1.0 INTRODUCTION

This Data Summary Report summarizes characterization activities conducted at Individual Hazardous Substance Site (IHSS) Group 700-12 at the Rocky Flats Environmental Technology Site (RFETS or Site) in Golden, Colorado. Characterization activities were planned and executed in accordance with the Industrial Area (IA) Sampling and Analysis Plan (SAP) (IASAP) (DOE 2001a) and IASAP Addendum #IA-02-01 (DOE 2001b).

IHSS Group 700-12 consists of Potential Area of Concern (PAC) 700-1106, Process Waste Spill – Portal 1. The location of IHSS Group 700-12 (PAC 700-1106) is shown on Figure 1.

2.0 SITE CHARACTERIZATION

Characterization of IHSS Group 700-12 consisted of historical knowledge (DOE 1992) and two sampling locations with specifications as described in IASAP Addendum #IA-02-01 (DOE 2001b). No existing characterization data were identified for this PAC. The sampling specifications for the characterization samples collected are listed in Table 1. The location of these samples and analytical results are shown on Figure 2. There were no sampling location deviations from the IASAP Addendum. Analytical results greater than background mean plus two standard deviations or method detection limits are presented in Table 2. A summary of analytical results is presented in Table 3. Real data are presented in Appendix A.

Results indicate that all contaminant concentrations are less than the RFCA Tier II action levels (ALs). No analytical results are above RFCA Wildlife Refuge Worker (WRW) ALs. A comparison of the analytical results to the RFCA WRW and Ecological Receptor ALs is presented in Appendix B.

Analytical results indicate that No Further Accelerated Action (NFAA) for IHSS Group 700-12 is warranted for the following reasons:

- All contaminant concentrations are less than WRW ALs.
- All contaminant concentrations are less than Ecological Receptor ALs.
- There is no identified potential to exceed surface water standards at a POC from this IHSS Group.

Approval of this Data Summary Report constitutes regulatory agency concurrence of this IHSS Group as an NFAA. This information and NFAA determination will be documented in the FY03 Historical Release Report (HRR).

Table 1
IHSS Group 700-12 – Characterization Sampling Specifications

IHSS Group	IHSS/PAC/UBC Site	Location Code	Easting	Northing	Media	Depth Interval	Analyte	Lab Method
700-12	PAC 700-1106 – Process Waste Spill – Portal 1	CG40-A0001	2084109.79	749467.01	surface soil	A	radionuclides	HPGe
		CG40-A0002	2084104.48	749474.74	surface soil	A	radionuclides	HPGe

Table 2
IHSS Group 700-12 – Characterization Data Greater Than Background Mean Plus Two Standard Deviations

IHSS Group	IHSS/PAC/UBC Site	Sampling Location	Easting	Northing	Media	Beginning Depth (feet)	Ending Depth (feet)	Analyte	Result	Background Concentration +2SD	Unit
700-12	PAC 700-1106 – Process Waste Spill – Portal 1	CG40-A001	2084109.76	749467.02	surface soil	0	0.17	Uranium-235	0.11	0.09	pCi/g

SD = standard deviation

Table 3
IHSS 700-12 - Summary of Analytical Results

Analyte	Total Number of Samples Collected	Number of Samples Above Detection Limit	Detection Frequency (%)	Maximum Concentration	Average Concentration	Tier I Action Level	Tier II Action Level	Background Concentration + 2SD	Unit
Americium-241	2	0	0	0	0	215	38	0.02	pCi/g
Plutonium-239/240	2	0	0	0	0	1429	252	0.07	pCi/g
Uranium-234	2	0	0	1.46	1.22	1738	307	2.30	pCi/g
Uranium-235	2	0	0	0.11	0.11	135	24	0.09	pCi/g
Uranium-238	2	0	0	1.46	1.22	586	103	2.00	pCi/g

3.0 DATA QUALITY ASSESSMENT

The Data Quality Objectives (DQOs) for this project are described in the IASAP (DOE 2002). All DQOs for this project were achieved based on the following:

- Regulatory agency approved sampling program design (IASAP Addendum #IA-02-01[DOE 2002]);
- Collection of samples in accordance with the sampling design (Section2);
- Results of the Data Quality Assessment as described in the following sections.

3.1 Data Quality Assessment Process

The DQA process ensures that the type, quantity, and quality of environmental data used in decision making are defensible and is based on the following guidance and requirements:

- EPA QA/G-4, 1994a, Guidance for the Data Quality Objective Process;
- EPA QA/G-9, 1998, Guidance for the Data Quality Assessment Process; Practical Methods for Data Analysis; and
- DOE Order 414.1A, 1999, Quality Assurance.

Verification and validation (V&V) of the data are the primary components of the DQA. The final data are compared with original project DQOs and evaluated with respect to project decisions; uncertainty within the decisions; and quality criteria required for the data, specifically precision, accuracy, representativeness, completeness, comparability, and sensitivity (PARCCS). Validation criteria are consistent with the following RFETS-specific documents and industry guidelines:

- EPA 540/R-94/012, 1994b, USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review;
- EPA 540/R-94/013, 1994c, USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review; and
- Kaiser-Hill Company, L.L.C.(K-H) V&V Guidelines:
 - General Guidelines for Data Verification and Validation, DA-GR01-v1, 1997a.
 - V&V Guidelines for Isotopic Determinations by Alpha Spectrometry, DA-RC01-v1, 1998.
 - V&V Guidelines for Volatile Organics, DA-SS01-v1, 1997b.
 - V&V Guidelines for Semivolatile Organics, DA-SS02-v1, 1997c.
 - V&V Guidelines for Metals, DA-SS05-v1, 1997d.
- Lockheed-Martin, 1997, Evaluation of Radiochemical Data Usability, ES/ER/MS-5.

This report will be submitted to the Comprehensive Environmental, Response, Compensation and Liability Act (CERCLA) Administrative Record (AR) for permanent storage 30 days after being provided to the Colorado Department of Public Health and Environmental (CDPHE) and/or the U.S. Environmental Protection Agency (EPA).

3.2 Verification and Validation of Results

Verification ensures that data produced and used by the project are documented and traceable in accordance with quality requirements. Validation consists of a technical review of all data that directly support the project decisions so that any limitations of the data relative to project goals are delineated and the associated data are qualified accordingly. The V&V process defines the criteria that constitute data quality, namely PARCCS parameters. Data traceability and archival are also addressed. V&V criteria include the following:

- Chain-of-custody;
- Preservation and hold-times;
- Instrument calibrations;
- Preparation blanks;
- Interference check samples (metals);
- Matrix spikes/matrix spike duplicates (MS/MSD);
- Laboratory control samples (LCS);
- Field duplicate measurements;
- Chemical yield (radiochemistry);
- Required quantitation limits/minimum detectable activities (sensitivity of chemical and radiochemical measurements, respectively); and
- Sample analysis and preparation methods.

Evaluation of V&V criteria ensures that PARCCS parameters are satisfactory (i.e., within tolerances acceptable to the project). Satisfactory V&V of laboratory quality controls are captured through application of validation “flags” or qualifiers to individual records.

Raw hardcopy data (e.g., individual analytical data packages) are currently filed by RIN and are maintained by Kaiser-Hill Analytical Services Division (K-H ASD); older hardcopies may reside in the Federal Center in Lakewood, Colorado. Electronic data are stored in the RFETS Soil and Water Database (SWD).

3.2.1 Accuracy

The following measures of accuracy were evaluated:

- Laboratory Control Sample Evaluation;
- Surrogate Evaluation;
- Field Blanks; and
- Sample Matrix Spike (MS) Evaluation

Results are compared to method requirements and project goals. The results of these comparisons are summarized where the result could impact project decisions. Particular attention is paid to those values near ALs when QC results could indicate unacceptable levels of uncertainty for decision-making purposes.

Only two samples were acquired from the 700-12 area, and both analyses were for gamma spectroscopy. Neither of the two samples (results) was validated; however, several gamma spectroscopy samples prior to and following the 700-12 samples were validated. Specifically, the samples of interest are 02E0025-001 and -002. Thirty-eight (38) gamma spectroscopy samples have been validated to date, including 02E0009-013 and 02E0053-17, which bracket the analysis time of the two samples in question. Consequently, the two samples collected for 700-12 may be considered valid without qualification through inference from the V&V process.

Laboratory accuracy and precision were acceptable based on the discussion above. Sampling precision was acceptable because results, from both samples, were repeatable to quantities well below Rocky Flats Cleanup Agreement (RFCA) Tier II ALs and proposed WRW ALs (DOE, et al 2002). Sensitivities were satisfactory as minimum detectable activities (MDAs or RLs) were less than ½ of all respective RFCA Tier II ALs and proposed WRW ALs (DOE, et al 2002).

Laboratory Control Sample Evaluation

Laboratory Control Sample (LCS) measurements are not available for IHSS Group 700-12.

Surrogate Evaluation

Surrogate measurements are not available for IHSS Group 700-12.

Field Blank Evaluation

Adequate frequency of field blank evaluation is given by a 5% or greater ratio of blank samples to real samples for the overall ER Program. Detectable amounts of contaminants within the blanks, which could indicate possible cross-contamination of samples, are evaluated if the same contaminant is detected in the associated real samples. When the real result is less than 10 times the blank result, the real result is eliminated. Field blanks were not collected at IHSS Group 700-12.

Sample Matrix Spike Evaluation

MS measurements are not available for IHSS Group 700-12.

3.2.2 Precision

Matrix Spike Duplicate Evaluation

MS duplicate measurements are not available for IHSS Group 700-12.

Field Duplicate Evaluation

Field duplicate results are not available for IHSS Group 700-12.

Completeness

Based on original project DQOs, a minimum of 25% of ER Program analytical (and radiological) results must be formally verified and validated. Of that percentage, no more than 10% of the results may be rejected, which ensures that analytical lab practices are consistent with quality requirements. No IHSS Group 700-12 records were verified or validated, however, association with previous and subsequent validated records indicates that the data is acceptable.

3.2.3 Sensitivity

Reporting limits, in units of ug/kg for organics, mg/kg for metals, and pCi/g for radionuclides, were compared with RFCA Tier I and Tier II ALs and proposed WRW and ecological ALs. Adequate sensitivities of analytical methods were attained for all results. "Adequate" sensitivity is defined as a reporting limit (RL) less than an analyte's associated AL, typically less than one-half the AL.

3.3 Summary of Data Quality

Field blanks were not collected for IHSS Group 700-12 and laboratory QA measurements are not available. Data collected and used for IHSS Group 700-12 is adequate for decision-making based on ER Program Goals.

4.0 REFERENCES

DOE, 1992, Historical Release Report for the Rocky Flats Plant, Rocky Flats Plant, Golden, Colorado, June.

DOE, 1999, DOE Order 414.1A, Quality Assurance.

DOE, 2001a, Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

DOE, 2001b, Industrial Area Sampling and Analysis Plan Addendum #IA-02-01, Rocky Flats Environmental Technology Site, Golden, Colorado, November.

EPA QA/G-4, 1994, Guidance for the Data Quality Objective Process.

EPA QA/G-9, 1998, Guidance for the Data Quality Assessment Process; Practical Methods for Data Analysis.

Kaiser-Hill (K-H), 1997, General Guidelines for Data Verification and Validation, DA-GR01-v1, December.

Lockheed-Martin, 1997, Evaluation of Radiochemical Data Usability, ES/ER/MS-5.

APPENDIX A

IHSS GROUP 700-12 REAL DATA

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LOCATION_CODE	CG40-001	LATITUDE	749467.02	LONGITUDE	2084109.758	ELEVATION	0	SAMP_NUM	02E0025-001	CUST_SAMP_NUM	CG40-A001
COLLECTION_TIME	1246	DEPTHSTART	0.3	DEPTHEND	0.45	DEPTH_UNIT	FT	AST_RIN	02E0025	SRT_BOTTLE_NUM	02E0025-001.001
RESULT_SEQUENCE_ID	5553764	CAS_NO	14331-83-0	ANALYTE_NAME	AC-228	RESULT_TYPE_CODE	TRI	RESULT	1.01	RESULT_UNIT	PCUG-WGT
LAB_SAMPLE_RECEIPT_DATE	04-Apr-02	LAB_RESULT_QUALIFIER_CODES		DETECTION_LIMIT_TYPE_CODE	MDA	DETECTION_LIMIT	0.27	SS_DILUTION_FACTOR	1	RC_SAMPLE_VOLUME	
RC_LCS_YIELD_FRACTION		VALIDATION_QUALIFIER_CODE		VALIDATION_REASON_CODES		VALIDATION_DATE		SECOND_RESULT_TYPE_CODE		LCS_RELATIVE_BIAS	
SAMPLE_TYPE_CODE	SS	SAMPLE_QC_CODE	REAL	SAMPLE_QC_PARTNER		COLLECTION_DATE	04-Apr-02	NO_LONGER_REF_IND		JOURNAL_COMMENT	
LINE_ITEM_CODE	RC10B019	MATRIX_CODE	SOLID	DATA_PACKAGE_ID	605912	TEST_METHOD_NAME	GAMMA SPECTROSCOPY	TOTAL_PROPAGATED_ERROR		RC_DUPLICATE_EQUIVALENCY	
LAB_CODE	URS	LAB_ANALYSIS_DATE	08-Apr-02	LAB_SAMPLE_NO	CMLSU-118	LAB_BATCH_ID	0204041938C	RC_SIGMA_ERROR		RC_LCS_FRACTIONAL_SMPL_RECOVER	
RC_SAMPLE_VOLUME_UNIT_CODE											

Note: No QC data for IHSS Group 700-12 due to the small size of the data set.

13-Jun-03

APPENDIX B

IHSS GROUP 700-12 WILDLIFE REFUGE WORKER/ECOLOGICAL RECEPTOR ACTION LEVEL COMPARISON TABLE

Appendix B
IHSS Group 700-12 - Wildlife Refuge Worker Action Level Comparison

IHSS/PAC/UBC Site	Sampling Location	Analyte	Medium	Soil Begin Depth (feet)	Soil End Depth (feet)	Result	Wildlife Refuge Worker Action Level	Ecological Receptor Action Level	Background Mean +2SD	Unit
PAC 700-1106, Process Waste Spill - Portal 1	CG40-A001	Uranium-235	Surface Soil	0	0.17	0.11	8	1,900	0.09	pCi/g

Best Available Copy

Figure 1
IHSS 700-12, PAC 700-1106
Data Summary

KEY

PAC

Building

Paved area

Dirt road

Stream, ditch, or
other drainage

Surface Soil
Sampling Location

N

60

0

60

120

180

Feet

Scale = 1:2,000

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RADMS

Prepared for:

KAISER•HILL
COMPANY

700-12ds aprJune 2003

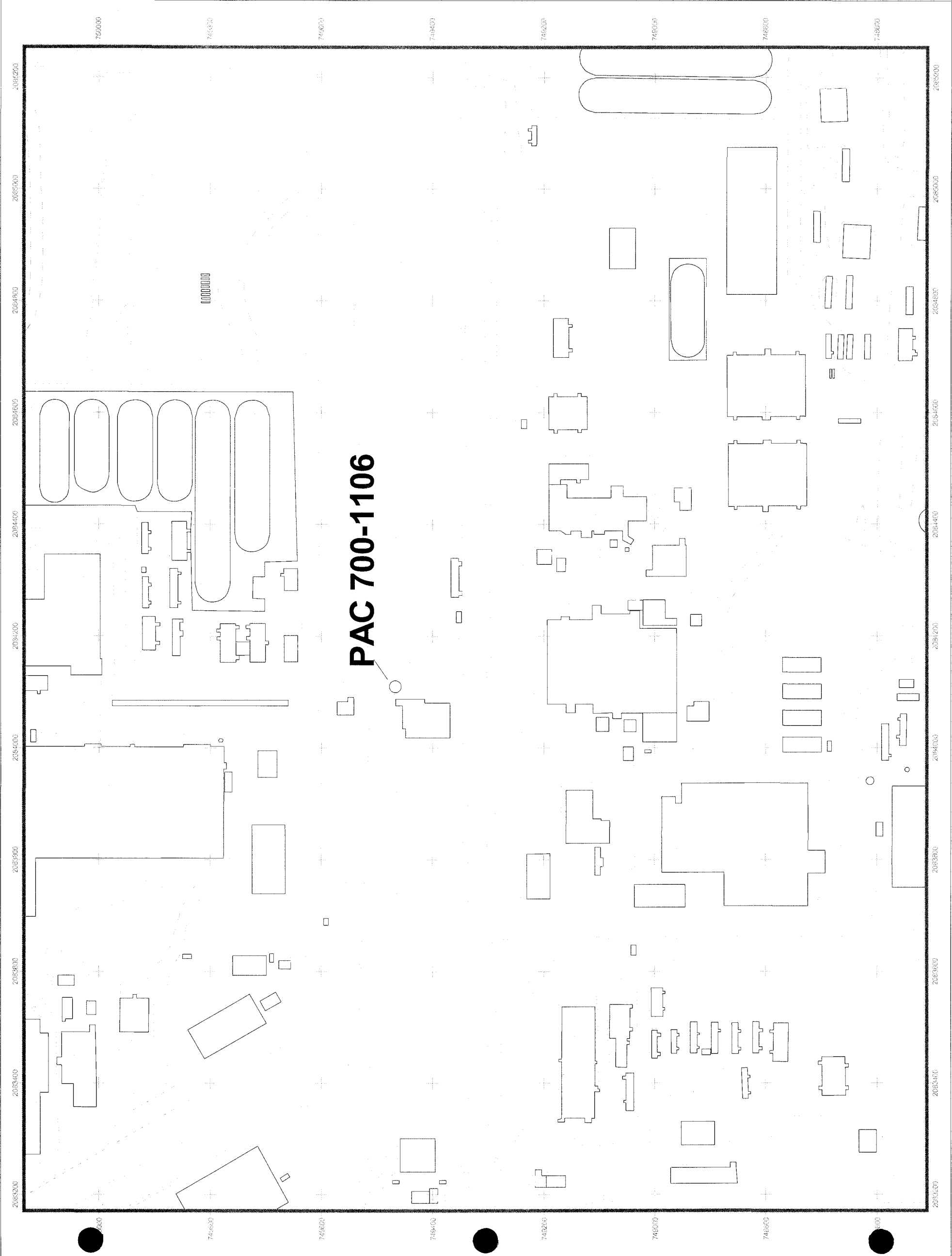








Figure 2
IHSS 700-12, PAC 700-1106
Data Summary

KEY

-  PAC
-  Building
-  Paved area
-  Dirt road
-  Stream, ditch, or other drainage
-  Surface Soil Sampling Location



Scale = 1:100

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:



Prepared for:



700-12ds apr

September 2002

Analyte	Result	Background	Tier_1	Tier_2	Unit
Americium-241	0.00000	0.02000	209	38	pCi/g
Plutonium-239/240	0.00000	0.07000	1088	252	pCi/g
Uranium-234	0.98000	2.30000	1627	307	pCi/g
Uranium-235	0.00000	0.09000	113	24	pCi/g
Uranium-238	0.98000	2.00000	506	103	pCi/g

Analyte	Result	Background	Tier_1	Tier_2	Unit
Americium-241	0.00000	0.02000	209	38	pCi/g
Plutonium-239/240	0.00000	0.07000	1088	252	pCi/g
Uranium-234	1.46000	2.30000	1627	307	pCi/g
Uranium-235	0.11000	0.09000	113	24	pCi/g
Uranium-238	1.46000	2.00000	506	103	pCi/g